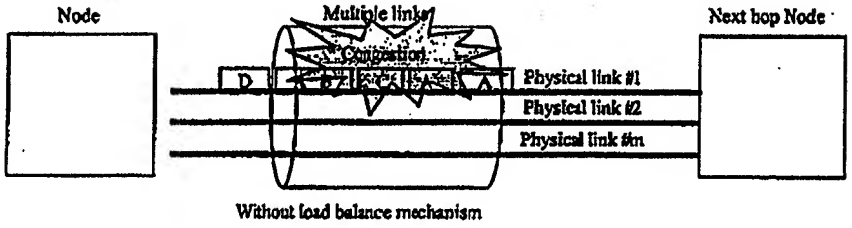
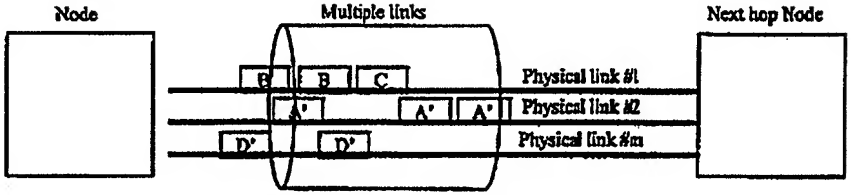
Fig.1



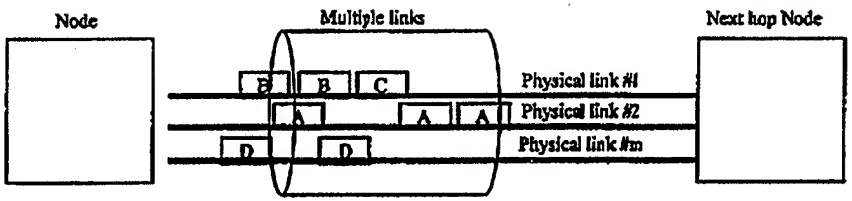
Without load balance mechanism

Fig.2



) With Conventional load balance mechanism

Fig.3



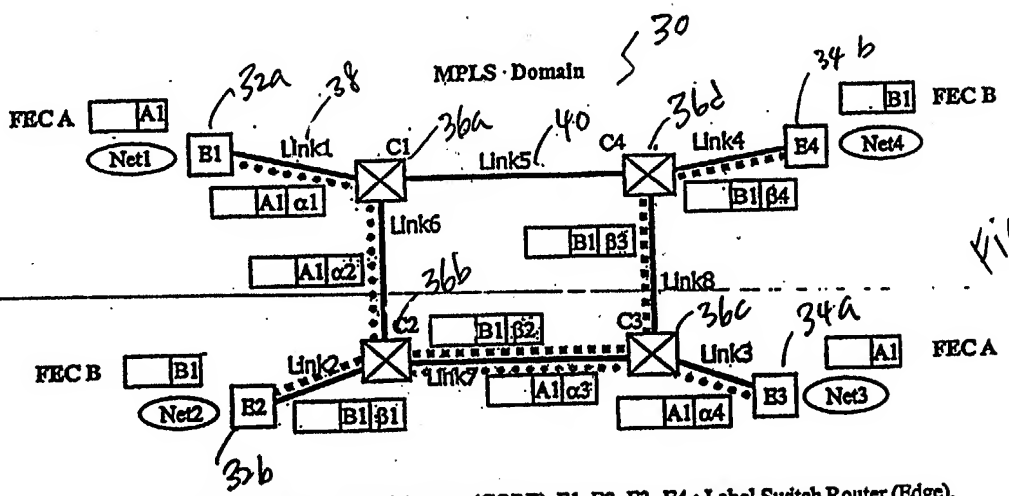


Fig. 4

C1, C2, C3, C4 : Label Switch Router (CORE), E1, E2, E3, E4 : Label Switch Router (Edge),
A1, B1: IP Destination Address, α1, α2, α3, α4 , β1, β2, β3, β4 : Label

Example of the network (MPLS) domain

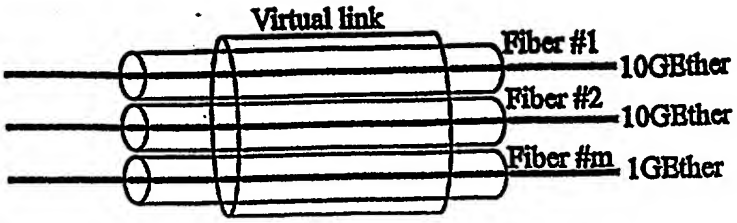


Fig. 5a

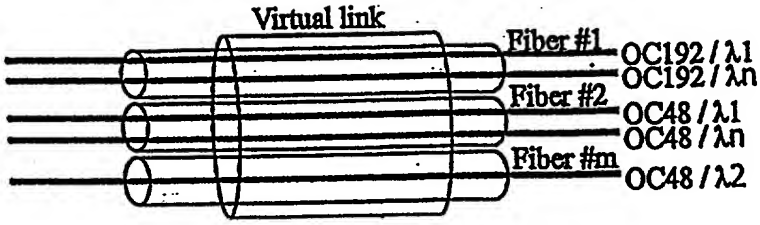


Fig. 5b

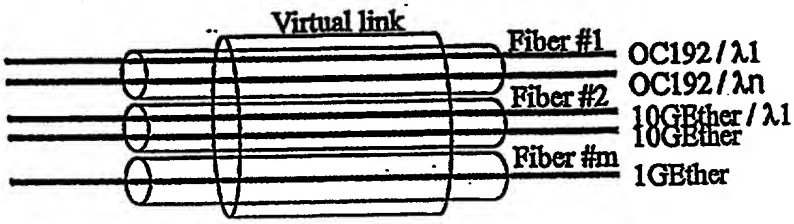


Fig. 5c

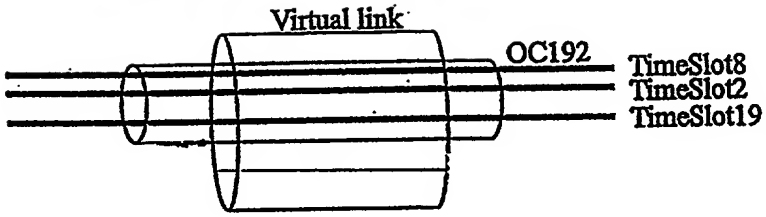


Fig. 5d

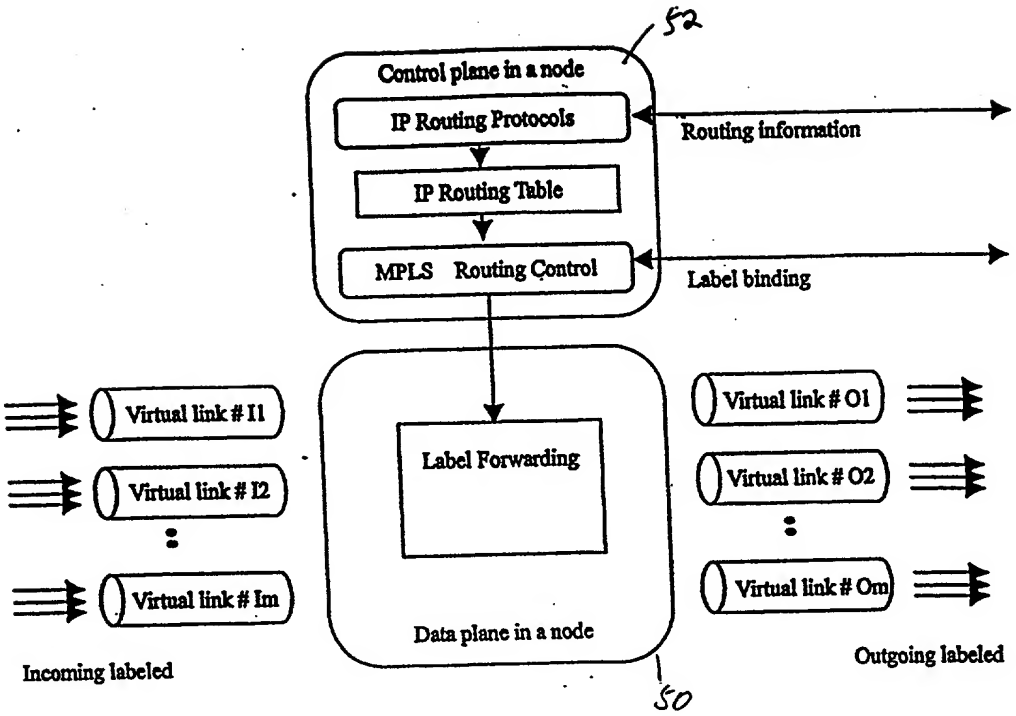


Figure 6 LSR Architecture

Figure 7

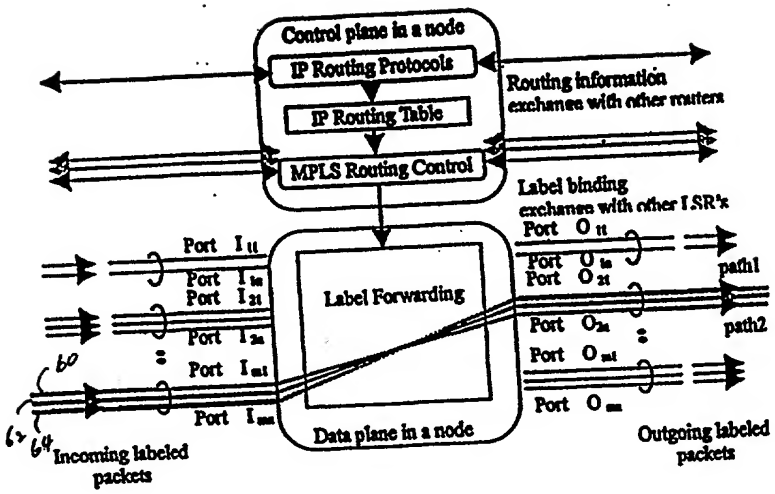
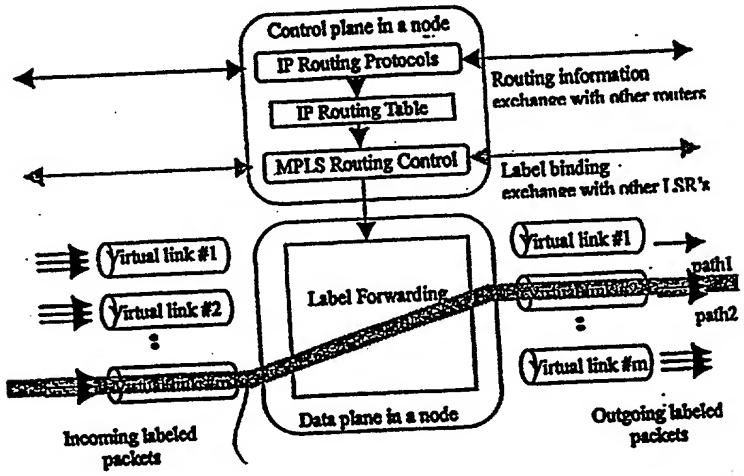
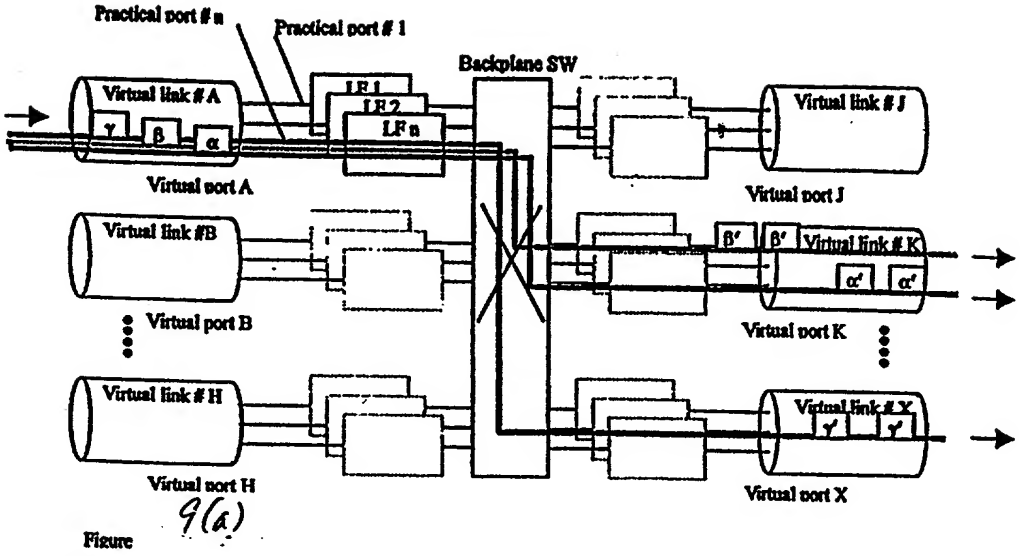


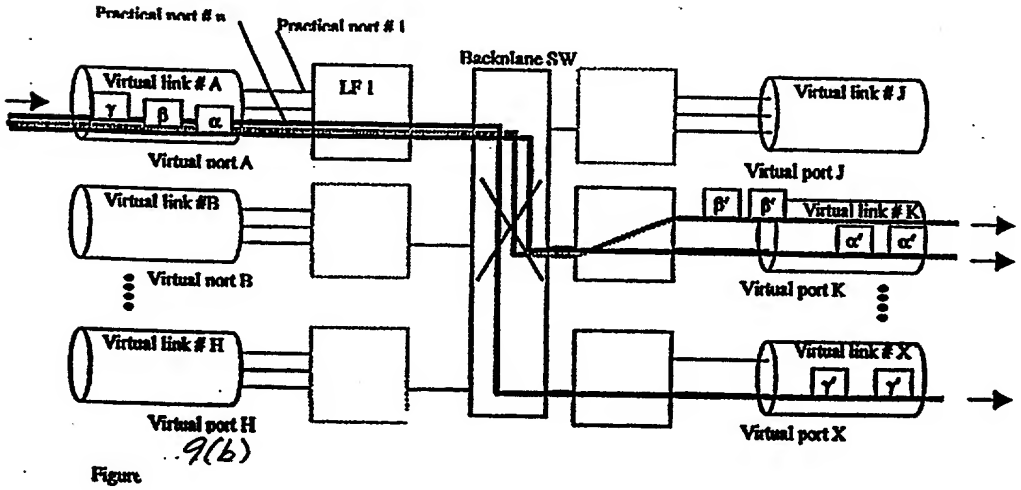
Figure 8





9(a)

Figure



9(b)

Figure

90 92 94 96

Label Forwarding Table maintained by the MPLS control plane

Input practical port #	Input virtual port #	Input Label	Output Label	Output virtual port #	Output practical port #
n	A	α	α'	K	$f(\alpha')$
n	A	β	β'	K	$f(\beta')$
n	A	γ	γ'	X	$f(\gamma')$
2	A	δ	δ'	B	$f(\delta')$
1	A	ε	ε'	B	$f(\varepsilon')$
2	A	ζ	ζ'	H	$f(\zeta')$
1	A	η	η'	J	$f(\eta')$
5	A	σ	σ'	K	$f(\sigma')$
n	A	κ	κ'	X	$f(\kappa')$

Figure Label Forwarding Table and mechanism to decide practical output port at the sending LSR

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98 100 90 92 94 96

Label Forwarding Table maintained by the MPLS control plane

Tag	Hash value of incoming label	Input practical port #	Input virtual port #	Input Label	Output Label	Output virtual port #	Output practical port #
O	$f(\alpha')$	n	A	α'	α''	K	$f(\alpha'')$
O	$f(\beta')$	n	A	β'	β''	K	$f(\beta'')$
O	$f(\gamma')$	n	A	γ'	γ''	X	$f(\gamma'')$
	$f(\delta')$	2	A	δ'	δ''	B	$f(\delta'')$
O	$f(\varepsilon')$	1	A	ε'	ε''	B	$f(\varepsilon'')$
O	$f(\zeta')$	2	A	ζ'	ζ''	H	$f(\zeta'')$
O	$f(\eta')$	1	A	η'	η''	J	$f(\eta'')$
	$f(\sigma')$	5	A	σ'	σ''	K	$f(\sigma'')$
	$f(\kappa')$	n	A	κ'	κ''	X	$f(\kappa'')$

Figure Fast lookup mechanism using a hash

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